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EXAMINER

ALBERTALLI, BRIAN LOUIS

ART UNIT	PAPER NUMBER
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2626

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/626,455

Applicant(s)

LI, HANG

Examiner

Brian L. Albertalli

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-12 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Cao et al. (*Base Noun Phrase Translation Using Web Data and the EM Algorithm*).

In regard to claim 1, Cao et al. disclose a method of identifying a translation in a target language for at least one source word in a source language, the method comprising:

transforming a representation of context words in the source language into a transformed representation of context words in the target language based in part on multiple different translations for at least one context word in the target language (page 3, Figs. 2 and 4, step 1; a frequency vector of contexts containing a source language is transformed into a vector of multiple different translations in the target language; the translation candidates are based on multiple translations of context words, e.g. "age", page 2, Fig. 1);

determining candidate representations of context words for at least two candidate translations in the target language (page 3, Figs. 2, step 2, a frequency vector of candidate translations is generated; or a term frequency inverse document frequency vector is generated, page 4, Fig. 4);

using the transformed representation to score each candidate representation (page 3, Fig. 2; the posterior probability $P(c|D)$ based on the candidate and transformed vectors; or a cosine between the transformed representation and the candidate representation is determined as a score, page 4, Fig. 4); and

selecting a candidate translation based on the scores for the candidate representations (outputting the highest scoring results, final step in Figs. 2 and 4).

In regard to claim 2, Cao et al. disclose the representation of context words in the source language comprises a frequency vector wherein each element in the frequency vector comprises a count of the number of times a respective word in the source language appears as a context word for the at least one source word (a frequency vector is constructed in Figs. 2 and 4, step 1 from counts of contexts performed in Fig. 1, step 4; see also "Context Information" section on page 3).

In regard to claim 3, Cao et al. disclose transforming the representation of context words in the source language comprises using a probability of a word in the target language (see page 3, equation (2), the EM algorithm used in step 1 of Figs. 2 and 4 determines the probability $fe(c)$).

In regard to claim 4, Cao et al. disclose the probability of the word in the target language is trained using an iterative algorithm ($fe(c)$ is determined using the iterative EM algorithm, page 3, "EM Algorithm" section).

In regard to claim 5, Cao et al. disclose the iterative algorithm utilizes a probability that is based in part on entries in a translation dictionary (the relation is between the source and target is based on a translation dictionary, page 3, "EM Algorithm" section, 1st paragraph).

In regard to claim 6, Cao et al. disclose the iterative algorithm comprises an expectation-maximization algorithm (page 3, "EM Algorithm" section).

In regard to claim 7, Cao et al. disclose transforming the representation of context words in the source language comprises forming a frequency vector as the transformed representation (the source language vector is transformed into a transformed frequency vector D, Figs. 2 and 4, step 1 and page 3, "EM Algorithm" section, final paragraph).

In regard to claim 8, Cao et al. disclose transforming the representation of context words in the source language comprises forming a term frequency-inverse document frequency vector (in Fig. 4, the EM-TF-IDF algorithm creates a TF-IDF vector A from the transformed vector D in step 1; see also page 4, section 3.3).

In regard to claim 9, Cao et al. disclose each candidate representation comprises a term frequency-inverse document frequency vector (in Fig. 4, step 2, a TF-IDF vector B is created).

In regard to claim 10, Cao et al. disclose the transformed representation comprises a vector (TF-IDF vector A) and each candidate representation comprises a vector (TF-IDF vector B) and using the transformed representation to score each candidate representation comprises determining the cosine of the angle between the transformed representation vector and each candidate representation vector (tfidf(c) used for scoring is determined by calculating the cosine of (A,B), Fig. 4, step 2).

In regard to claim 11, Cao et al. disclose using the transformed representation to score each candidate representation comprises determining a score using a function that is based on the transformed representation and the candidate representation (Fig. 2, the score is based on EM-NBC, which is a function of the transformed representation D and the candidate representation $P(c|c)$, page 4, "EM-NBC" section).

In regard to claim 12, Cao et al. disclose the candidate representation comprises a probability of a context word in the target language given a candidate translation (the candidate representation $P(c|c)$ is the probability of a context word given a candidate translation, Fig. 2 and page 4, "EM-NBC" section).

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3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 30-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Itoh et al. (U.S. Patent Application Publication 2002/0161569).

In regard to claim 30, Itoh et al. disclose a computer-readable medium having computer-executable instructions for performing steps comprising:

serving a page to a client to solicit a source phrase from the client (Fig. 5, a page is displayed for a client, and unknown phrases 28a, 28b, and 28c are displayed so that the client can select one as a source phrase, page 4, 1st column, lines 12-28);

receiving the source phrase from the client (the client clicks one of the unknown phrases to select the phrase as a source phrase, page 4, paragraph 46);

accessing pages through a network to identify translations for the source phrase (when the unknown phrase is clicked, an internet search is conducted to find translations of the phrase, page 4, paragraph 46);

returning a candidate translation for the source phrase and a page identifier that identifies the page that contains the translation to the client (Fig. 6, a plurality of candidate translations and URL's identifying the page containing the translation are presented to the user, page 4, paragraph 46);

receiving an indication as to whether the client accepts the candidate translation as a proper translation of the source phrase (Fig. 10, the user selects the word to be used as a translation, page 4, 2nd column, lines 25-50); and

using the indication to determine whether to add the translation to a translation dictionary accessed by a server (Fig. 11, the selected word is used to update a translation dictionary, paragraphs 48 and 50).

In regard to claim 31, Itoh et al. disclose updating a translation dictionary used by the client if the client indicates that it accepts the candidate translation as a proper translation (a personal user dictionary is updated with the selected translation, paragraphs 48 and 50).

In regard to claim 32, Itoh et al. disclose accessing pages through a network comprises accessing web pages through the Internet (when the unknown phrase is clicked, an internet search is conducted to find translations of the phrase, page 4, paragraph 46).

In regard to claim 33, Itoh et al. disclose the page identifier is a link to a web page that contains the translations (Fig. 6, a URL of a page containing the translation, page 4, paragraph 46).

In regard to claim 34, Itoh et al. disclose returning at least two candidate translations for the source phrase to the client (Fig. 6, a plurality of candidate translations and URL's identifying the page containing the translation are presented to the user, page 4, paragraph 46).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 13-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao et al., in view of Official Notice.

In regard to claim 13, Cao et al. disclose a computerized method for performing steps comprising:

receiving a string of words in a source language (an input Base NP, Fig. 1, step 1);

transforming the string of words into a transformed representation using an iterative algorithm (a frequency vector of context words is transformed into a transformed frequency vector using an iterative EM algorithm, Figs. 2 and 4, step 1);

using the transformed representation to score strings of words in the target language (the transformed frequency vector D is used to score the translations, Figs. 2 and 4, step 2).

While the method disclosed by Cao et al. is performed by a computer, Cao et al. do not specifically disclose an embodiment wherein the method is executed from computer-readable instructions on a computer-readable medium.

Official Notice is taken that it is notoriously well known in the art to embody a method to be performed by a computer as a computer readable medium comprising computer readable instructions for performing said method.

It would have been obvious to one of ordinary skill in the art at the time of invention to embody the method disclosed by Cao et al. as computer-readable instructions on a computer readable medium, because this would define structural and functional interrelationships between the computer-readable instructions and the rest of the computer which would permit the method's functionality to be realized.

In regard to claim 14, Cao et al. disclose selecting a string of words in the target language based on the score (outputting the highest scoring results, final step in Figs. 2 and 4).

In regard to claim 15, Cao et al. disclose identifying pages containing the selected string of words in the target language as relevant to the string of words in the source language (web pages containing contexts containing the candidates are

identified to transform the source language string of words to the target language by the EM algorithm, Fig. 1, step 4 and page 3, "Context Information" section).

In regard to claim 16, Cao et al. disclose receiving a string of words comprises identifying multiple strings of words, each string representing a context for a word in the source language (a linear combination of EM-NBCs, each EM-NBC denoting a different context, is used, page 4, "EM-NBC-Ensemble" section).

In regard to claim 17, Cao et al. disclose transforming the string of words comprises forming a frequency vector from the strings of words and transforming the frequency vector into a transformed frequency vector (the input source language string is used to create a first frequency vector, which is then transformed into a transformed frequency vector, Figs. 2 and 4, step 1).

In regard to claim 18, Cao et al. disclose using the transformed representation to score a string of words in the target language comprises determining a probability for each word in the string of words in the target language and using the probabilities for the words and the transformed frequency vector to score the string of words in the target language (the probability of a word in the target language $P(c)$ and the transformed frequency vector D are used to generate a score, page 3, "Prior Probability Estimation" section and page 4, "EM-NBC" section).

In regard to claim 19, Cao et al. disclose using the transformed representation to score a string of words in the target language comprises forming a target frequency vector based on the string of words and using the target frequency vector and the transformed frequency vector to score the string of words (a target frequency vector $P(c|c)$ and transformed frequency vector D are used in the EM-NBC score, page 4, "EM-NBC" section).

In regard to claim 20, Cao et al. disclose using the transformed representation to score a string of words in the target language comprises forming a single score for multiple strings of words in the target language (the EM-NBC-Ensemble forms a single score for a plurality of different contexts in the target language, page 4, "EM-NBC-Ensemble" section).

In regard to claim 21, Cao et al. disclose transforming the string of words further comprises forming a transformed term frequency-inverse document frequency vector based in part on the frequency vector (a TDF-IF vector A is formed based on a frequency vector, Fig. 4, step 1).

In regard to claim 22, Cao et al. disclose using the transformed representation to score a string of words in the target language comprises forming a target term frequency-inverse document frequency vector based in part on the string of words and using the transformed term frequency-inverse document frequency vector and the target

term frequency-inverse document frequency vector to score the string of words (a target term TDF-IF B is formed and the TDF-IF vectors A and B are scored by calculating the cosine of (A,B), Fig. 4, step 2).

In regard to claim 23, Cao et al. disclose the iterative algorithm is an expectation-maximization algorithm (page 3, "EM Algorithm" section).

7. Claims 24-27 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al. (U.S. Patent Application Publication 2002/0161569), in view of Chin et al. (U.S. Patent Application Publication 2001/0029455).

In regard to claim 24, Itoh et al. disclose a method of updating a translation dictionary, the method comprising:

providing two possible translations for a word to a client (Fig. 6, when a word cannot be translated by a translator, a list of web pages comprising possible translations are presented to a user, page 4, 1st column, lines 12-28 and paragraph 46);

receiving an indication from the client as to which translation was deemed correct (Fig. 10, the user selects the word to be used as a translation, page 4, 2nd column, lines 25-50);

using the indications from the clients to select one of the translations for entry in a translation dictionary (Fig. 11, the selected word is used to update a translation dictionary, paragraphs 48 and 50).

Itoh et al. do not disclose that the possible translations for a word are provided to multiple clients (i.e. at least two clients).

Chin et al. disclose a method for updating a translation dictionary, wherein a possible translation is provided to at least two clients, so that the clients can indicate a correct translation for updating the dictionary (a proper translation of a term is specified jointly by two different users, page 10, paragraph 178).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Itoh et al. to provide a possible translation to at least two clients, because users lacking a familiarity with languages other than their own would be able to build a user specific dictionary that would handle words not handled well by a general translation dictionary, as taught by Chin et al. (page 10, paragraph 178).

In regard to claim 25, Itoh et al. disclose providing a possible translation comprises examining a page on a network to find a possible translation for a word (a term that cannot be translate is searched for on internet pages, page 4, paragraph 46).

In regard to claim 26, Itoh et al. disclose providing a link to a page containing the possible translation along with the possible translation (Fig. 6, URL's of pages containing the word are provided, page 4, paragraph 26).

In regard to claim 27, Itoh et al. disclose providing the at least two possible translations to a client further comprises receiving a request from the client for a

translation of a word before providing the at least two possible translations (by selecting one of the words that could not be translated, the user initiates a request for a translation of the word, page 4, paragraph 26).

In regard to claim 35, Itoh et al. disclose receiving the source phrase from a client (the client clicks one of the unknown phrases to select the phrase as a source phrase, page 4, paragraph 46);

returning at least two candidate translations to the client (Fig. 6, a plurality of candidate translations and URL's identifying the page containing the translation are presented to the user, page 4, paragraph 46);

receiving an indication as to whether the client accepts a candidate translation as a proper translation (Fig. 10, the user selects the word to be used as a translation, page 4, 2nd column, lines 25-50); and

using the indications to determine whether to add a translation to a translation dictionary (Fig. 11, the selected word is used to update a translation dictionary, paragraphs 48 and 50).

Itoh et al. do not disclose that the possible translations for a word are provided to multiple clients (i.e. at least two clients).

Chin et al. disclose a method for updating a translation dictionary, wherein a possible translation is provided to at least two clients, so that the clients can indicate a correct translation for updating the dictionary (a proper translation of a term is specified jointly by two different users, page 10, paragraph 178).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Itoh et al. to provide a possible translation to at least two clients, because users lacking a familiarity with languages other than their own would be able to build a user specific dictionary that would handle words not handled well by a general translation dictionary, as taught by Chin et al. (page 10, paragraph 178).

8. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al., in view of Chin et al., and further in view of Furuta (U.S. Patent Application Publication 2003/0009320).

In regard to claim 28, Itoh et al. and Chin et al. do not disclose using an indication from the client to select at least one translation comprises determining if a translation was deemed correct more than a threshold number of times.

Furuta discloses a method of translation that allows multiple clients to select a correct translation, wherein using an indication from the client to select at least one translation comprises determining if a translation was deemed correct more than a threshold number of times (when a translation has been repeated a threshold number of times, i.e. the access frequency of that translation, the translation is forwarded to a translator to update the translation dictionary, page 3, paragraph 48 and paragraph 44).

It would have been obvious to one of ordinary skill in the art at the time of invention to further modify the combination of Itoh et al. and Chin et al. to only update the translation dictionary if a translation was deemed correct more than a threshold number of times, because this would ensure there was a broad level of agreement

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about a particular translation and would decrease the likelihood of an incorrect translation being added to the translation dictionary.

9. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al., in view of Chin et al., and further in view of Official Notice.

In regard to claim 29, Itoh et al. and Chin et al. do not disclose not using an indication from a client to select a translation if the client has provided more than a threshold number of indications for a translation.

Official Notice is taken that it is notoriously well-known in the art to restrict the number of times a client can provide an indication (i.e. "vote") by setting a threshold of indications that a client can indicate (generally, one vote per client).

It would have been obvious to one of ordinary skill in the art at the time of invention to further modify Itoh et al. and Chin et al. to not use an indication from a client to select a translation if the client has provided more than a threshold number of indications for a translation, because this would ensure a single client would not bias the result of a translation decision by providing multiple indications.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Moore (U.S. Patent 7,103,531) discloses updating a translation model using an Expectation Maximization method. Hull (U.S. Patent 6,885,985)

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discloses determining translation based on non-parallel corpora. Liu et al. (U.S. Patent 7,107,204) disclose determining translation using the EM algorithm on parallel corpora. Scanlan (U.S. Patent 6,857,022) disclose a method for clients to translate Internet pages. Okura et al. disclose a system for allowing a client to select a translation. Kobayakawa et al. (U.S. Patent 6,119,078) disclose a method for translating web pages. Peterson et al. (U.S. Patent 6,598,015) disclose a server system for allowing a plurality of translators and clients to interact.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L. Albertalli whose telephone number is (571) 272-7616. The examiner can normally be reached on Mon - Fri, 8:00 AM - 5:30 PM, every second Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BLA 2/15/07


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